

THE USE OF MRI FOR THE EARLY DETECTION OF BREAST CANCER

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contrast enhanced MRI of the breast is not limited by breast density and has been shown to be extremely sensitive in the detection of invasive breast cancer. However, because of the variable sensitivity of MRI for ductal carcinoma in situ (DCIS), between 45% and 100%, MRI is currently not recommended as a replacement for screening mammography (1). A more recent single institution study suggests that MRI may have a higher sensitivity as compared to mammography for DCIS than previously thought, particularly for high-grade DCIS (2). The use of MRI in the general population has been limited by its moderate specificity, leading to false positives and unnecessary biopsies. Therefore, its use has been focused on studying patients in whom the yield from MRI is likely to be higher. Multiple studies have shown that MRI is a useful tool as an adjuvant to screening mammography in women at high risk for breast cancer (3-5).

In April 2007 the American Cancer Society (ACS) published new guidelines for screening high-risk woman (6). Risk is greatest for women with genetic mutations including BRCA1, BRCA2, p53, Cowden's, and those women who underwent radiation therapy for lymphoma at an early age. Methods for estimating risk based on medical and family history include the Gail, Claus, and BRCAPRO mathematical models. Women who have a 20-25% lifetime risk for breast cancer based on family history as calculated by any of the aforementioned models are also considered high risk and appropriate for annual MRI. Women whose benefit from screening MRI is considered questionable by the ACS due to insufficient data include; women with a personal history of breast cancer, prior biopsy yielding atypia or women with extremely dense breasts on mammography (6,7). The decision to perform screening MRI in these women should be made on a case by case basis.

Table: Risk factors that place women at increased risk of breast cancer

BRCA1 or BRCA2 mutation, or untested first degree relative of known carrier
Chest radiation between age 10-30 for Hodgkin's Lymphoma
Lifetime risk of 20-25% as determine by statistical risk assessment models such as BRCAPRO or Gail based on personal and family history
Other genetic mutations including p53 and Cowden

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